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**Seedlings of Piperale.**—In continuing his work on the structure of the seedlings of certain Piperale, HILL<sup>42</sup> has published results dealing chiefly with several species of *Peperomia*. The transition phenomena are described in detail; that is (in brief), the arrangement of the vascular tissues in the cotyledonary or primary node, the transition region between root and stem, where the earliest tissues of the vascular system arise. The conclusion in reference to the primitive or reduced character of *Peperomia* is confirmatory of JOHNSON'S view that it is a reduced genus, the determining factor in reduction possibly being the epiphytic habit of many forms. It is also suggested that these transition phenomena may not be such important phylogenetic criteria as has been assumed by some investigators, since they do not seem to be sufficiently rigid to withstand the influence of varying conditions.—J. M. C.

**Antipodal cells.**—In a long article LOTSCHER<sup>43</sup> discusses the structure and function of the antipodal cells of angiosperms. On the basis of their anatomy and physiology he finds three types of antipodals: (1) those remaining as naked protoplasts or free cells and functioning in the resorption of the nucellus (Orchidaceae, Cruciferae, Geraniaceae, Linaceae, Papilionaceae, Primulaceae, Polmoniaceae, and Scrophulariaceae); (2) those well differentiated and forming a roundish cell-complex which serves to transform the foodstuffs which are brought to the embryo-sac (Gramineae, Araceae, Ranunculaceae, Mimosaceae, Cesalpiniaceae, and in combination with the third type, predominant in Liliaceae, Iridaceae, Zingiberaceae, Boraginaceae, and Solanaceae); (3) those, singly or together, having an elongated form and functioning principally as haustoria (most Rubiaceae).—CHARLES J. CHAMBERLAIN.

**Mechanics of secretion.**—This problem has been attacked by LEPESCHKIN, who finds<sup>44</sup> that from "unicellular" plants (*Pilobolus*, *Mucor*, *Phycomyces*, and *Vaucheria* are so called), as well as from the epidermal structures of green plants, secretion is to be referred to the unlike permeability for solutes of the plasma membrane in the absorbing and secreting regions of the structure. The process of secretion and the influence of external agents upon it agree completely with the mathematical formulae for the energy involved, based upon the current theories of osmotic pressure. The permeability of the membrane is easily altered by external and internal influences. Whether this is characteristic of all semipermeable membranes or only of plasmatic membranes remains to be determined. The research adds some facts but leaves much yet to be explained regarding the subject.—C. R. B.

<sup>42</sup> HILL, T. G., On the seedling-structure of certain Piperale. *Annals of Botany* 20:160-175. *pl.* 10. 1906.

<sup>43</sup> LOTSCHER, P. KONRAD, Ueber den Bau und die Funktion der Antipoden in der Angiospermen-Samenanlage. *Flora* 94:213-262. *pls.* 1-2. 1905.

<sup>44</sup> LEPESCHKIN, W. W., Zur Kenntniss des Mechanismus der aktiven Wasserausscheidung der Pflanzen. *Beihefte Bot. Cent.* 19:409-452. 1906.